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| Breakout 1: Algebraic Thinking | | Grade |
| 90 minutes | Math Learning Goals   * I will understand the three key patterning concepts (additive, multiplicative, and algebraic thinking) * I will identify the mathematics necessary to respond to students in the moment. | Materials  Teacher journals  Chart paper  Markers  Masking Tape  Colour Tile  Pattern blocks |
|  | 🡪  Nottawasaga: Ice Breaker Activity: In your journal, write a three-digit number that represents you in some way (example: 475 – I am 47 and have 5 people in my family). Also, identify a personal learning goal or two for your week at math CAMPPP. Share at your table. As a table group, identify a three-digit number that represents your group as a whole. Also come up with a group goal. Represent your group goal and your group number on chart paper – be prepared to post and share. Each group shares, then each individual introduces themselves using their three-digit number, and explains how their number relates in some way to the group number. Use pipe cleaner to create your three-digit number to hang on your hat.  Kempenfelt: Revisit your three-digit number and goal – create a new three-digit number for yourself that represents your experience at math CAMPPP so far, and revisit your personal goal. Comment on your progress so far. As a group, revisit your chart paper and use graffiti to represent your growth, or create a new three-digit number with explanation on chart paper. Gallery walk and provide written feedback to your colleagues.  All: What did you hear in the breakout session that resonated with you, or gave you a different perspective? Jot down a couple of notes in your journal. Popcorn-share some responses. (10 minutes) |  |
| Minds On… |
| 30 minutes |
|  | 🡪 Nottawasaga and Kempenfelt: Algebraic problem solving  Participants complete the following problem in partners, on chart paper:  In the Pattern Kingdom, each city is connected to the other cities by a road. To make it simple for people to get around, there is a road connecting each city with all of the other cities. When the Pattern Kingdom only had 3 cities, there were 3 roads to connect them.  When the Pattern Kingdom grew to 4 cities, there were 6 roads to connect them so that there was a direct route from any city to any other city.  Now the Pattern Kingdom has 14 cities. How many roads does it have?  What if there were 32 cities? How many roads would there be?  Is there a rule?  How did you figure it out?  Can you give evidence?  Doing the Math: Facilitators will circulate, provide prompts as needed and responding “in the moment”. | afl *Assessment* ***for*** *learning* |
| Action! |
| 20 minutes |
|  | 🡪 Nottawasaga and Kempenfelt: Responding  Facilitators lead a bansho bringing out additive thinking, multiplicative thinking, algebra, generalizations.  Participants are asked to work with a grade team partner, to reflect and discuss: What math do you see?  Where do you see this in our Ontario curriculum (process expectations as well).  How did the facilitation get at “responding to students in the moment”? |  |
| Consolidate Debrief |
| 35 minutes |
| 5 minutes | Further Classroom Consolidation  Provide breakout memento with the following prompt:  Reflect on your experiences today. What hooked you? What do you still need to know about the three algebraic representations? Write your reflection on a fish, and post it under the following quote.  *It matters not how many fish are in the sea if you don't have any bait on your hook.  -Anonymous*  At any point in the week, you can post your reflection or new a-ha moments. |  |

Additional supports

**Math literature:**

1. Share the power point of the story *Ten Black Dots*. With a partner, on chart paper, solve the following problem:

How many dots would you need to represent the numbers from 1 to 50?

(This brings the problem, from a primary book, to a junior level.)

How many dots would you need to represent any number? (Making generalizations)

1. Spaghetti and Meatballs for All
2. The Cake That Mack Ate